

IN THE CLAIMS:

Please amend claims 1, 6 and 8-11 as follows:

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1. (Amended) An integrated circuit probe card inspection system for [determining the relative location of] probes in a probe array, comprising:
a viewing system for providing [an] a digital image of the tip of each probe [in a digital form],
a window with a flat surface contacted by each of said probe tips, said viewing system obtaining said digital image of each probe tip through said window,
a computer means with software means to analyze the [probe image]
position of each probe within the [video] digital image, [and]
positioning means to determine the position of each probe in [position the center of] the digital image relative to a known physical position in order to determine the location of the probes relative to each other [with said probe contact in the field of view], and
automated means for evaluating a characteristic of at least one bus probe included in said probe array based on said relative location information.

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6. (Amended) An integrated circuit probe card inspection system for determining the location and length of [the] a scrub mark which would be made by a probe tip on an integrated circuit bonding pad, comprising:
a viewing system for providing [an] a digital image of the probe tip [in a digital form],
a window with a flat surface contacted by said probe tip, said viewing system obtaining said digital image through said window in a first state where said probe tip is driven in contact with said window with a first force, and in a second state where said probe tip is driven in contact with said window with a second force, said second force being different from said first force,

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a [computer] computerized means with software means to analyze the position of the probe tip [image position] within the [video] digital image in said first and second states, and for determining the location and length of the scrub mark based on said positions], and

positioning means to position the center of the digital image to a known physical position with said probe tip in the field of view].

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8. (Amended) An apparatus for determining the length of a probe tip included on a spring contact probe having a shank from which said probe tip extends, comprising:

contacting means for sequentially contacting a distal end of the probe [the] tip and the [beam] shank of [a] the spring contact probe,

positioning means for controlling X, Y and Z axis movements of said contacting means,

[measuring means for determining the angle of the scrub mark created by the probe tip upon contact and overdrive against a surface,

measuring means for determining the position of the beam portion of the probe from the position of the tip and the angle of the scrub mark,]

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measuring means for [determining] measuring the [vertical] height of each contacted point [from a known reference], and

calculating means for determining [the] a difference in the two measured heights, said difference being representative of [representing] the length of the probe tip.

9. (Amended) A method for learning [the] probe tip locations [of] for a plurality of probe tips in an existing known good probe card, said method comprising the steps of [by]:

capturing a digitized image of each probe tip on the probe card, [then]

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determining the relative position of each probe tip with respect to the other probe tips on the probe card, [then] and

constructing a file of said relative position information for use in determining [the] correct placement of probe tips on other probe cards of [the] a same type.

12. (Amended) A method for determining [the] an orientation and spatial position of an array of probes with respect [the] to a test apparatus [for determining probe position by], said method comprising the steps of:

positioning [the] a video microscope field of view within the array of probes, and

③ moving the field of view in a [known] predetermined direction along [the] an original axis in an X or Y dimension of the array, [chip corresponding to the probe card, and]

checking for probes appearing in the field of view during said movement, [and]

if no probes are found along the predetermined direction of the original axis selected, moving the field of view along the opposite direction of [that] the original axis and along [the] positive and negative directions of [the other] an axis perpendicular to the original axis, no more than the dimension of the chip in [that] in the respective axis, until probes are found in the field of view, [and]

digitizing [the] an image of any probe tips found by the video microscope within the field of view, [and]

determining by electrical means which probe of the array is being viewed by the video microscope, and

comparing the information thus obtained to predetermined [the] X, Y probe locations of the probe array to determine the orientation of the probe array with respect to the X and Y axes and the location of at least one probe in the array.